

VA2500. ,VFA2000. Electric Actuator with Spring Return and Non-Spring Return

Introduction

The VA2500. 2500N thrust and VFA2000. 2000N thrust (spring return) valve-actuators are used to control valves in HVAC systems. This new actuator is self-adjusting and therefore has a greatly reduced installation and commissioning time. They are of modular construction so that for instance, the required type of control signal is achieved simply by fitting a module with the required function in-situ.

Valves intended for use with the VA2500 are the Johnson Controls VG9000 PN6 & PN10 flanged valves and the VG8000 / VG8300 series PN16 & PN25 flanged valves.

All actuators are self adjusting, have a manual operation capability and a maximum stroke of 49mm.



VA2500 Actuator

Features and Benefits

| | |
|---|---|
| <input type="checkbox"/> Automatic stem coupling | Provides quick and easy mounting of the actuator to valves. Cuts installation costs |
| <input type="checkbox"/> Actuator fixed to valve with one ring nut | Fast and secure attachment to valve |
| <input type="checkbox"/> Self adjusting, automatic stroke adjustment, calibrated pressure control at the end positions | No input signal change necessary for calibration, considerable time saved |
| <input type="checkbox"/> Additional modules for 230V, 2 aux. switches, feedback potentiometer and split range unit available | One basic standard actuator, small storage space and quick availability |
| <input type="checkbox"/> IP66 | High protection class, greater area of application |
| <input type="checkbox"/> Selectable characteristic curve | Simpler solving of control tasks in-situ |
| <input type="checkbox"/> Selectable running time | Possible through DIP switch setting in-situ |

Ordering data

24V Actuators

| | |
|------------|-------------------------------|
| VA2500.1 | 2500N; Non-spring return |
| VFA2000.1A | 2000N; Spring return retracts |
| VFA2000.1E | 2000N; Spring return extends |

Accessory modules for in-situ installation

| | |
|----------------|---|
| VA2500+ZVA.2 | AC 230V module |
| VA2500+ZVA.P2 | 2k Ω feedback poti |
| VA2500+ZVA.S | 2 SPDT aux. switches |
| VA2500+ZVA.SRU | Split range unit module for proportional actuators only |
| VA2500+ZVA.EP | Kit for applications with temperatures greater than 140 °C - 200 °C |

Note: Either feedback potentiometer or aux. switches can be fitted not both.

Ordering Procedure

The valves and actuators can be ordered separately or factory mounted. When factory mounted, please add “+M” to the order code for the actuator.

For example:

For a 2-way valve, DN 65, k_{vs} 63, PN 16 plus 24 V 2500N actuator, order:

Item 1 **VG82G1S1N** (valve body)
 Item 2 **VA2500.1** (actuator)

Alternatively, if actuator is requested to be factory mounted, order:

Item 1 **VG82G1S1N** (valve body)
 Item 2 **VA2500.1+M** (actuator)

Actuator - Valve combinations

The VA2500. non-spring return and VFA2000. spring return electric actuators are intended for use in conjunction with the VG9000 and VG8000 valve series. The ordering data for these valve bodies are as follows:

● VG9000 series PN6 (K) and PN10 (L)

2-way PDTTC DN 65...100
 3-way mixing DN 65...100

● VG8000V series PN16 flanged valves

2-way PDTTC DN 15...150
 3-way mixing DN 15...150

● VG8000N series PN16 flanged valves

2-way PDTTC *) DN 15...150
 3-way mixing *) DN 15...150
 3-way diverting *) DN 15...150

*) Here DN 15 k_{vs} starts at 2.5

● VG8000H series PN25 flanged valves

2-way PDTTC *) DN 15...150 k_{vs}
 3-way mixing *) DN 15...150 k_{vs}
 3-way diverting *) DN 15...150 k_{vs}

*) Here DN 15 k_{vs} starts at 2.5

● VG8300N + H series (PN16 and PN25 pressure balanced flanged valves)

2-way PDTTC DN 40...150 k_{vs}

Please refer to the relevant flanged valve product bulletins for complete ordering information.

For use with non-Johnson Controls valves please contact Joventa.

Actuator – valve designation, close-off pressures




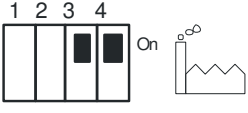
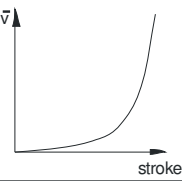
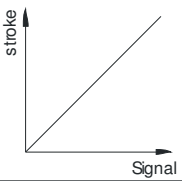
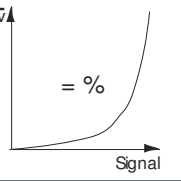
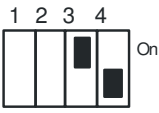
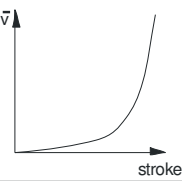
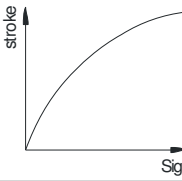
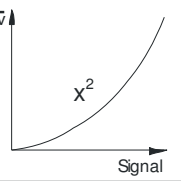
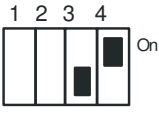
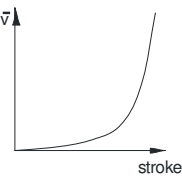
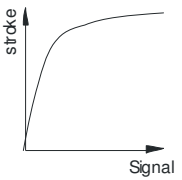
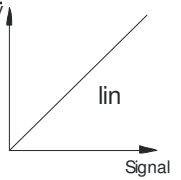

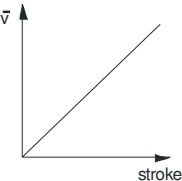
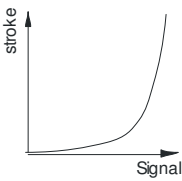
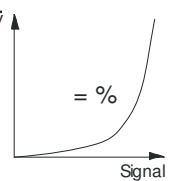
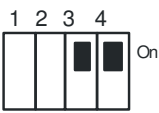
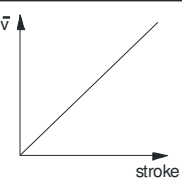
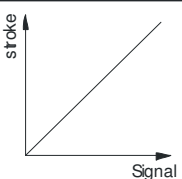
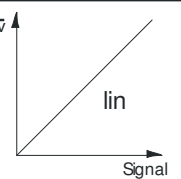
| Model | DN | k _{vs} (m ³ /h) | Close-off pressure (kPa) | |
|-----------------------------------|-----|-------------------------------------|----------------------------|-------------------------|
| | | | Non-Spring return actuator | Spring return actuator |
| | | | VA2500.1 | VFA2000.1E / VFA2000.1A |
| VG9000 PN6 Heating valve | | | | |
| VG9xGxS1K | 65 | 63 | 620 | 470 |
| VG9xHxS1K | 80 | 100 | 400 | 300 |
| VG9xJxS1K | 100 | 160 | 240 | 180 |
| VG9000 PN10 Heating valve | | | | |
| VG9xGxS1L | 65 | 63 | 620 | 470 |
| VG9xHxS1L | 80 | 100 | 400 | 300 |
| VG9xJxS1L | 100 | 160 | 240 | 180 |
| VG8000V PN16 Heating valve | | | | |
| VG8xAxV1N | 15 | 2.5/4 | 1600 | 1600 |
| VG8xBxV1N | 20 | 6.3 | 1600 | 1600 |
| VG8xCxV1N | 25 | 10 | 1600 | 1600 |
| VG8xDxV1N | 32 | 16 | 1600 | 1600 |
| VG8xExV1N | 40 | 25 | 1600 | 1600 |
| VG8xFxV1N | 50 | 40 | 1080 | 800 |
| VG8xGxV1N | 65 | 63 | 830 | 620 |
| VG8xHxV1N | 80 | 100 | 390 | 280 |
| VG8xJxV1N | 100 | 160 | 230 | 160 |
| VG8xKxV1N | 125 | 250 | 140 | 90 |
| VG8xLxV1N | 150 | 350 | 75 | 40 |



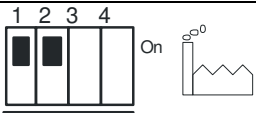

Actuator – valve designation, close-off pressures (continued)

| Model | DN | kvs (m ³ /h) | Close-off pressure (kPa) | |
|--|-----|-------------------------|----------------------------|-------------------------|
| | | | Non-Spring return actuator | Spring return actuator |
| | | | VA2500.1 | VFA2000.1E / VFA2000.1A |
| VG8000N PN16 System valves | | | | |
| VG8xAxS1N | 15 | 2.5 – 4 | 1600 | 1600 |
| VG8xBxS1N | 20 | 6.3/4 | 1600 | 1600 |
| VG8xCxS1N | 25 | 10/6.3 | 1600 | 1600 |
| VG8xDxS1N | 32 | 16/10 | 1600 | 1600 |
| VG8xExS1N | 40 | 25/16 | 1600 | 1600 |
| VG8xFxS1N | 50 | 40/25 | 1080 | 800 |
| VG8xGxS1N | 65 | 63/40 | 830 | 620 |
| VG8xHxS1N | 80 | 100/63 | 390 | 280 |
| VG8xJxS1N | 100 | 160/100 | 230 | 160 |
| VG8xKxS1N | 125 | 250/160 | 140 | 90 |
| VG8xLxS1N | 150 | 350/250 | 75 | 40 |
| VG8000H PN25 System valves | | | | |
| VG8xAxS1H | 15 | 2.5 – 4 | 2500 | 2500 |
| VG8xBxS1H | 20 | 6.3/4 | 2500 | 2500 |
| VG8xCxS1H | 25 | 10/6.3 | 2500 | 2500 |
| VG8xDxS1H | 32 | 16/10 | 2500 | 2500 |
| VG8xExS1H | 40 | 25/16 | 2000 | 1550 |
| VG8xFxS1H | 50 | 40/25 | 1020 | 750 |
| VG8xGxS1H | 65 | 63/40 | 790 | 580 |
| VG8xHxS1H | 80 | 100/63 | 370 | 260 |
| VG8xJxS1H | 100 | 160/100 | 210 | 140 |
| VG8xKxS1H | 125 | 250/160 | 120 | 80 |
| VG8xLxS1H | 150 | 350/250 | 70 | 40 |
| VG8300N PN16 pressure balanced valves | | | | |
| VG83ExS1N | 40 | 25/16 | 1600 | 1600 |
| VG83FxS1N | 50 | 40/25 | 1600 | 1600 |
| VG83GxS1N | 65 | 63/40 | 1600 | 1600 |
| VG83HxS1N | 80 | 100/63 | 1600 | 1600 |
| VG83JxS1N | 100 | 160/100 | 1600 | 1500 |
| VG83KxS1N | 125 | 250/160 | 1500 | 1400 |
| VG83LxS1N | 150 | 350/250 | 1400 | 1000 |
| VG8300H PN25 pressure balanced valves | | | | |
| VG83ExS1H | 40 | 25/16 | 2500 | 2500 |
| VG83FxS1H | 50 | 40/25 | 2500 | 2500 |
| VG83GxS1H | 65 | 63/40 | 2500 | 2500 |
| VG83HxS1H | 80 | 100/63 | 2500 | 2500 |
| VG83JxS1H | 100 | 160/100 | 2500 | 2000 |
| G83KxS1H | 125 | 250/160 | 1900 | 1400 |
| VG83LxS1H | 150 | 350/250 | 1500 | 1000 |

Adjustments

The actuator characteristic curve (proportional) and the actuator running time with regard to the application can be re-set prior to installation. The factory setting is a linear characteristic curve and 6s/mm running time.

| |  |  |  |
|---|---|--|---|
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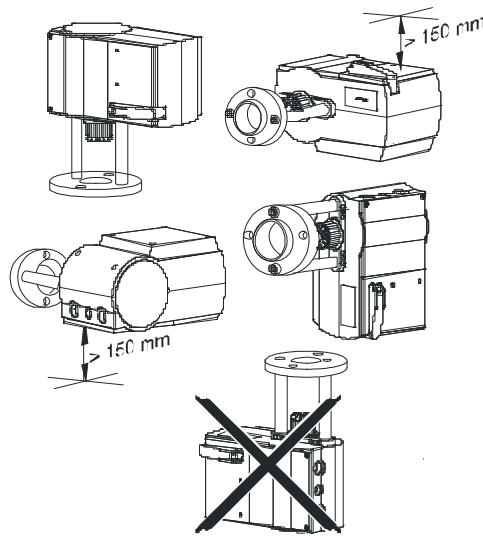
| Running time per mm | Switch configuration | Running time for 14 mm stroke | Running time for 25 mm stroke | Running time for 42 mm stroke |
|---------------------|--|-------------------------------|-------------------------------|-------------------------------|
| 2s |  | 28s ± 1 | 50s ± 1 | 84s ± 2 |
| 4s |  | 56s ± 2 | 100s ± 2 | 168s ± 4 |
| 6s |   | 84s ± 4 | 150s ± 4 | 252s ± 8 |

At this point, if required, additional modules can be fitted to the actuator and the cable adapters screwed in: 1xM20 x 1.5 and 1xM16 x 1.5 as delivered.

Mounting instructions

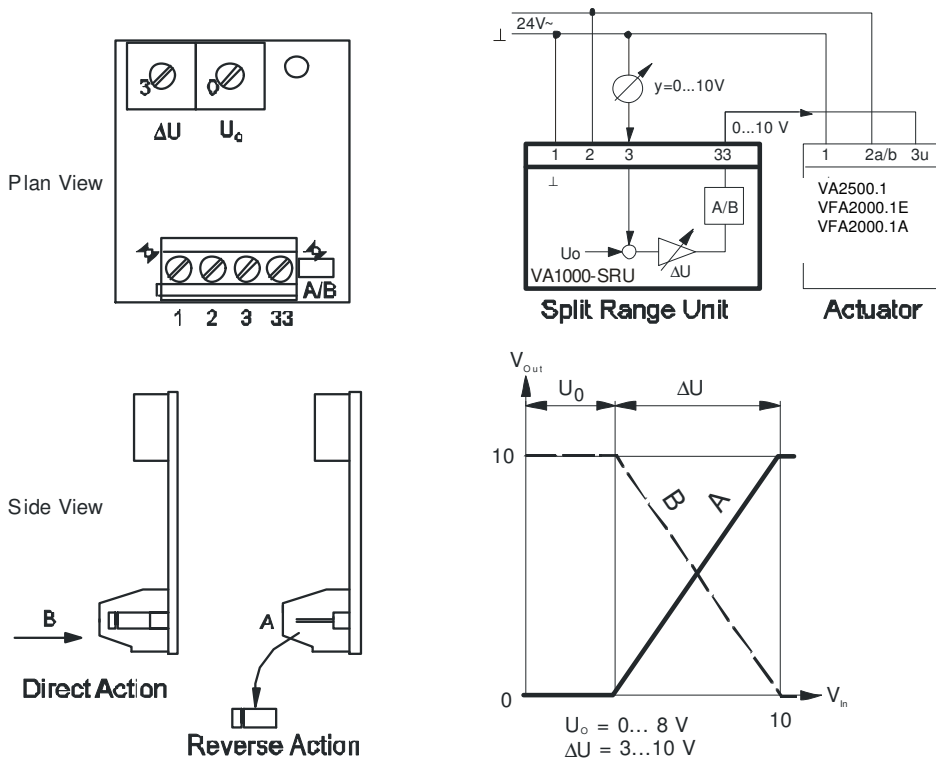
When mounting the actuator on a valve, please follow the instructions below:

- Valve sizes DN 15 to DN 40 actuator flanges are to be loosened, turned 90° and re-tightened. The actuator is then set on to the valve and fixed into position using the ring nut provided. The automatic coupling can now be put into the open position if not already so.
- It is recommended that the valves be mounted in the upright position in a conveniently accessible location.

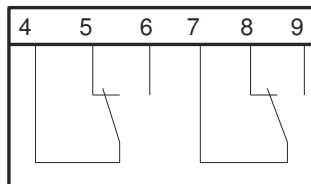


- The actuator must not be covered with insulating material
- Sufficient clearance must be allowed for actuator removal (refer to the dimension drawings)
- The valve must be fitted so that the plug seats against the flow as indicated by the arrow(s) on the valve body.
- All work is to be carried out by qualified personnel in accordance with the relevant **Service** and **Data** Information listed below:

◆ ZVA.SRU (for 24 V proportional only)

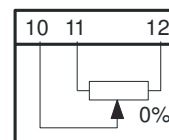


◆ ZVA.S Auxiliary Switches

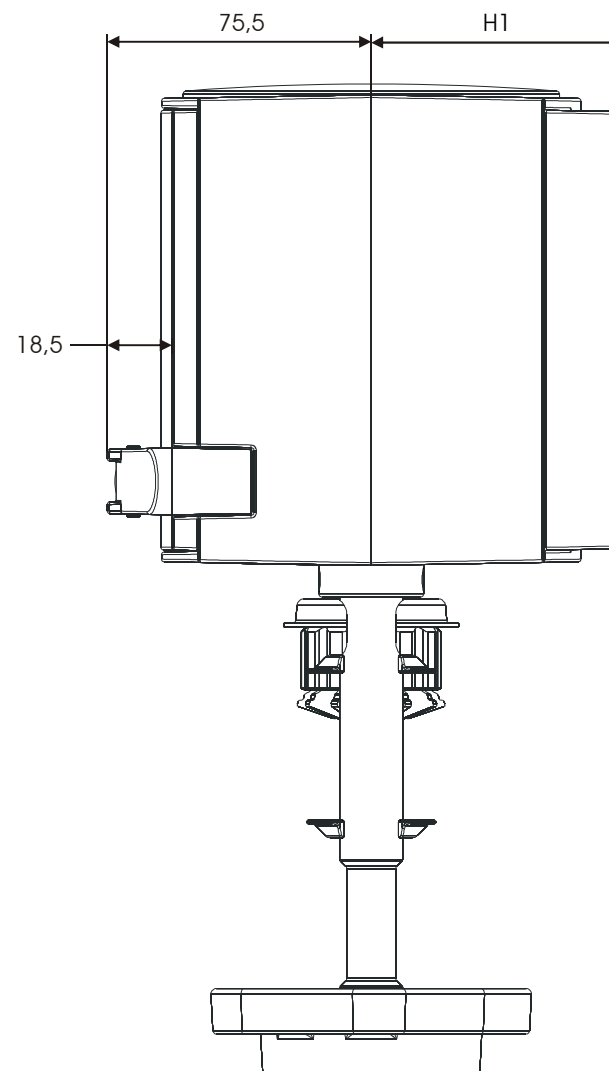
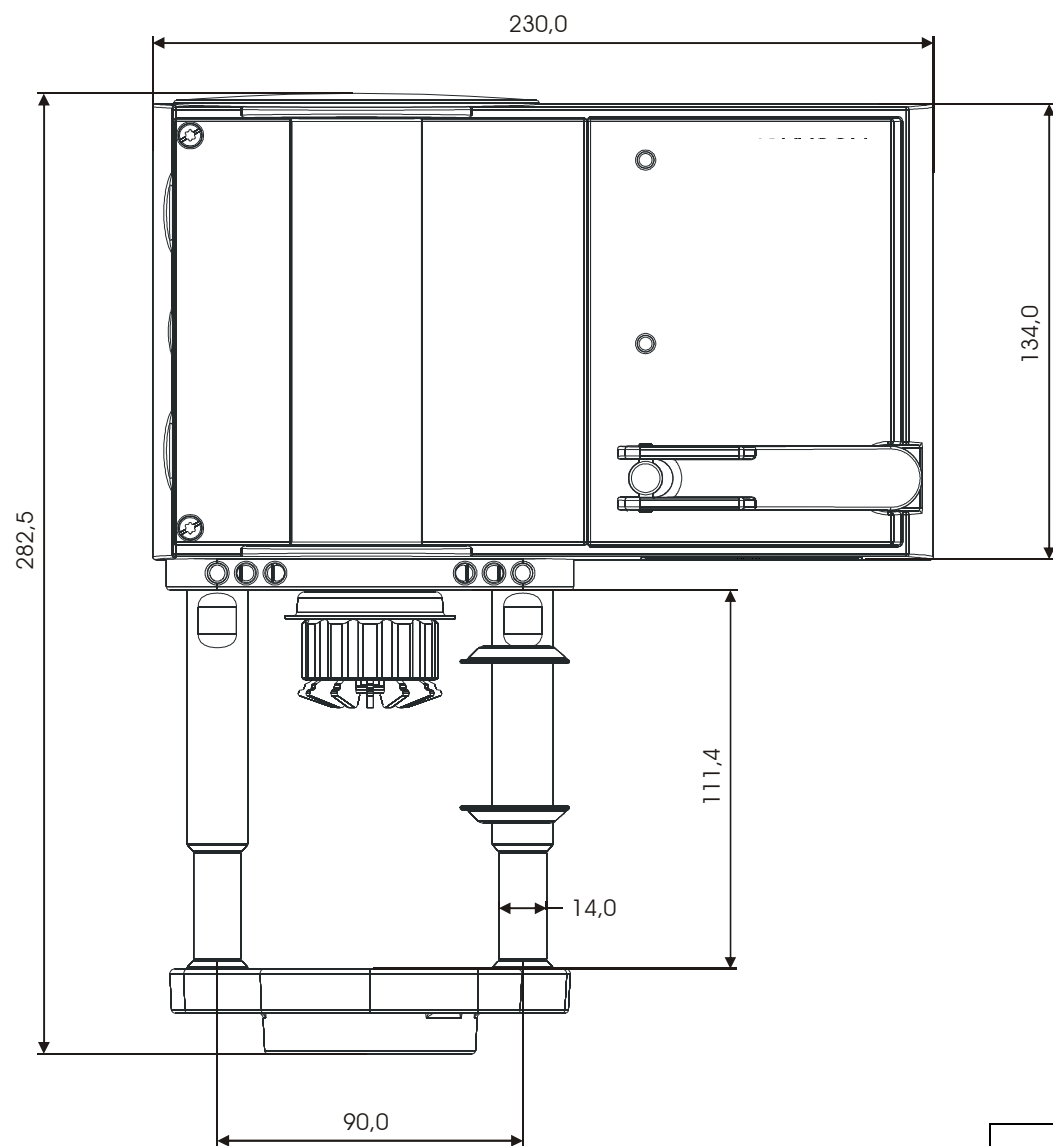


◆ ZVA.P2 Potentiometer

| s (mm) | Connection | | | Connection terminal |
|--------|------------|-------|-----|---------------------|
| 40 | 10 | 11a | 12a | top |
| 20 | 10 | 11b/c | 12c | down |
| 14 | 10 | 11b/c | 12b | top |
| | | 100% | 0% | |



Dimensions in mm



| | VA2500.1 | VFA2000.1E & VFA2000.1A |
|-----------|----------|-------------------------|
| H1 | 60 mm | 73 mm |

Specifications

| Actuator models | VA2500.1 Non-Spring-Return | VFA2000.1A Spring-Return retracts VFA2000.1E Spring-Return extends |
|--|--|---|
| Associated valve series and body sizes | VG9000K PN6, DN65...DN100, | Two way & mixing valves. |
| | VG9000L PN10, DN65...DN100, | Two way & mixing valves. |
| | VG8000V PN16, DN15...DN150, | Two way & mixing valves. |
| | *)VG8000N PN16, DN15...DN150 | Two-way, mixing & diverting valves. |
| | *)VG8000H PN25, DN15...DN150 | Two-way, mixing & diverting valves. |
| | VG8300N PN16, DN40...DN150 | Two way pressure balanced valves. |
| | VG8300H PN25, DN40...DN150 | Two way pressure balanced valves. |
| Control | 2-point, 3-point, Proportional, 0...10 V DC, 0...20mA | |
| Impedance | 100 kΩ @ DC 0...10 V - 50Ω @ 0...20mA | |
| Hand crank | Standard | |
| Supply voltage and frequency | AC 24 V ±20%, (50/60 Hz), DC 24 V ±15% Module AC 230 V ±15%, (50/60 Hz) | |
| Power consumption (Idling) | 20.5 VA (1.5 VA) | 17 VA (9.3 VA) |
| Nominal Thrust | 2500 N | 2000 N |
| Nominal stroke | 49 mm | |
| Nominal running speed | 2 / 4 / 6 s/mm – Factory setting = 6 s/mm | |
| Enclosure Protection / Class | IP 66 / III as per EN60730 | |
| Spring-return running time | 15s for 13mm valve stroke; less than 35s for 42mm valve stroke | |
| Operation | -10...+55 °C | |
| Storage | -30...+80 °C | |
| | R.H. < 95 %, non condensing | |
| Electrical Connection | 6 Terminals max. 2.5mm ² | 7 Terminals max. 2.5mm ² |
| Cable adapter | 2xM20 x 1.5 and 1xM16 x 1.5 (1 of each included in delivery) | |
| Noise level | 60 dB (A) @ 1 meter | 65 dB (A) @ 1 meter |
| Life time | Tested for 100 000 full cycles | Tested for 40 000 full cycles |
| Net weight | 4.2 kg | 5.7 kg |
| Approvals | European Directives: EMC (89 / 336 / EEC) LVD (73 / 23 / EEC) EN6100-6-1...4 EN60730-1 EN60730-2-14 | |

*) Here DN 15 k_{vS} starts at 2.5.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. is not liable for damages resulting from misapplication or misuse of its products.